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METHOD OF PRODUCING FILTER-TIPPED CIGARETTES

TECHNICAL FIELD

10       The present invention relates to a method of producing filter-tipped cigarettes.

BACKGROUND ART

As described, for example, in GB-2,241,866, filter-tipped cigarettes are known to be produced on a filter  
15 assembly machine defining internally a path along which elongated tobacco articles are fed in a direction crosswise to their respective axes. The above known filter assembly machine receives, at an input, a succession of first tobacco articles - hereinafter  
20 referred to as "double portions" - which, travelling transversely along said path through a cutting station, are each cut into two coaxial single portions. The single portions of each double portion are then spaced axially and separated by the interposition of a double filter,  
25 which is fed to the double portion feed line by a separate feed line, and forms, together with the relative pair of single portions, a second tobacco article hereinafter referred to as a "group".

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The component parts of each group are then connected integrally to one another at a rolling station by means of a gummed strip to form a third tobacco article - hereinafter referred to as a "double cigarette" - wherein  
5 a central portion of the strip covers the double filter, and the end portions of the strip cover the facing ends of the two single cigarette portions.

As anyone skilled in the art knows, rolling the groups to form the relative double cigarettes is a highly  
10 critical step, in that rolling speed, which is a direct function of the output rate of the filter assembly machine, must be kept within a given maximum value to avoid tobacco fallout from the open ends of the single portions.

15 For a given output rate of the filter assembly machine, rolling speed is also known to depend directly on the pitch with which the succession of groups is fed to the rolling station.

In connection with the above, it should be pointed  
20 out that, for reasons depending mainly on the structure of the devices feeding the double portions to the filter assembly machine, the standard pitch with which the groups are fed to the rolling station is relatively long (about 37.7 mm) and, though simplifying various handling  
25 operations upstream from the rolling station, is directly and largely responsible for the rolling speed of the groups.

To reduce rolling speed or increase the operating

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speed of the filter assembly machine without increasing rolling speed, US Patent No. 5,474,091 proposes feeding the double portions to the filter assembly machine with a shorter than standard pitch, i.e. a pitch approximately  
5 equal to but no shorter than the length of the strips used - in actual practice, a length ranging between approximately 32 and 20 mm; or reducing the pitch of the groups to the above shorter pitch just prior to rolling.

Experience has shown, however, that, on the one  
10 hand, feeding the double portions to the filter assembly machine with a reduced pitch calls for pitch-reducing devices external to the filter assembly machine and difficult to assemble and use, and, on the other hand, increasing the operating speed of the filter assembly  
15 machine by reducing the pitch just prior to rolling affects the reliability of the double filter feed line, which is in no way affected by the pitch reduction.

#### DISCLOSURE OF INVENTION

It is an object of the present invention to provide  
20 a method of producing filter-tipped cigarettes, designed to eliminate the aforementioned drawbacks.

More specifically, it is an object of the present invention to provide a method capable of maximizing the output rate of the filter assembly machine, not only for  
25 a given rolling speed, but also for a given double filter supply speed.

According to the present invention, there is provided a method of producing filter-tipped cigarettes

## CLAIMS

1) A method of producing filter-tipped cigarettes, the method comprising the steps of feeding an orderly  
5 succession of first tobacco articles (4), spaced with a first pitch (P1) and each defined by a double cigarette portion, to a first portion (S1) of a path (B) extending along a filter assembly machine (5); feeding said first articles (4) along said first portion (S1) and through a  
10 first cutting station (12) to cut said first articles (4) transversely into respective pairs of portions (13, 14), and then through spacing means (18) for axially spacing the portions (13, 14) in each said pair; feeding said pairs of spaced portions (13, 14) along a second portion  
15 (S2) of said path (B); interposing, as they travel along said second portion (S2), a double filter (21) between the portions (13, 14) in each said pair, to form a succession of second articles (29), each defined by the relative said pair of portions (13, 14) and by the  
20 relative interposed said double filter (21); applying by rolling, along said second portion (S2), a respective strip (33) to each second article (29) to connect the relative said pair of portions (13, 14) and the relative said double filter (21) and form a third article (40)  
25 defined by a double cigarette; feeding said third articles (40) along a third portion (S3) of said path (B) and through a second cutting station (45) to obtain, from each said third article (40), two fourth articles (46)

oppositely oriented and each defined by a filter-tipped cigarette; and feeding said fourth articles (46) along a fourth portion (S4) of said path (B) and through a turnover unit (50) to obtain a succession of equioriented  
5 said fourth articles (46); and being characterized by comprising the further step of subjecting said first articles (4), as they travel along said first portion (S1), to a pitch reduction to assume a second pitch (P2) shorter than said first pitch (P1) and of a length  
10 approximately equal to but no less than the length of the relative said strip (33).

2) A method as claimed in Claim 1, wherein said first pitch is about 37.7 mm, and said second pitch (P2) ranges between 30 and 32 mm.

15 3) A method as claimed in Claim 2, characterized in that said second pitch (P2) is about 31 mm long.

4) A method as claimed in one of the foregoing Claims, wherein said pitch reduction is made at the end of said first portion (S1).

20 5) A method as claimed in Claim 4, wherein said pitch reduction is made as said first articles (4) are transferred from said first portion (S1) to said second portion (S2).

6) A method as claimed in any one of the foregoing  
25 Claims, and comprising the further step of subjecting said third articles (40), as they travel along said second portion (S2), to a further pitch reduction to assume a third pitch (P3) shorter than said second pitch

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(P2).

7) A method as claimed in Claim 6, wherein said further pitch reduction is made as said third articles (40) are transferred from said second portion (S2) to  
5 said third portion (S3).

8) A method as claimed in any one of Claims 1 to 7, and comprising the further step of subjecting said fourth articles (46), as they travel along said fourth portion (S4), to yet a further pitch reduction to assume a fourth  
10 pitch (P4) shorter than said third pitch (P3).

9) A method as claimed in Claim 8, wherein said yet a further pitch reduction is made as said fourth articles (46) travel through said turnover unit (50).

10) A method of producing filter-tipped cigarettes,  
15 the method comprising the steps of feeding an orderly succession of first tobacco articles (4), spaced with a first pitch (P1) and each defined by a double cigarette portion, to a first portion (S1) of a path (B) extending along a filter assembly machine (5); feeding said first  
20 articles (4) along said first portion (S1) and through a first cutting station (12) to cut said first articles (4) transversely into respective pairs of portions (13, 14), and then through spacing means (18) for axially spacing the portions (13, 14) in each said pair; feeding said  
25 pairs of spaced portions (13, 14) along a second portion (S2) of said path (B); interposing, as they travel along said second portion (S2), a double filter (21) between the portions (13, 14) in each said pair, to form a

succession of second articles (29), each defined by the relative said pair of portions (13, 14) and by the relative interposed said double filter (21); applying by rolling, along said second portion (S2), a respective  
5 strip (33) to each second article (29) to connect the relative said pair of portions (13, 14) and the relative said double filter (21) and form a third article (40) defined by a double cigarette; feeding said third articles (40) along a third portion (S3) of said path (B)  
10 and through a second cutting station (45) to obtain, from each said third article (40), two fourth articles (46) oppositely oriented and each defined by a filter-tipped cigarette; and feeding said fourth articles (46) along a fourth portion (S4) of said path (B) and through a  
15 turnover unit (50) to obtain a succession of equioriented said fourth articles (46); and being characterized by comprising the further steps of subjecting said first articles (4), as they travel along said first portion (S1), to a pitch reduction to assume a second pitch (P2)  
20 shorter than said first pitch (P1) and of a length approximately equal to but no less than the length of the relative said strip (33); subjecting said third articles (40), as they travel along said second portion (S2), to a second pitch reduction to assume a third pitch (P3)  
25 shorter than said second pitch (P2); and subjecting said fourth articles (46), as they travel along said fourth portion (S4), to a third pitch reduction to assume a fourth pitch (P4) shorter than said third pitch (P3).